

Newburyport Dec 5. '92

Mr Geo C. Davenport

Dear Sir

I wrote Professor Eaton
a while ago that I had a plant
of a hybrid fern (I claim it to be
a hybrid between *A. marginal* and
A. cristatum) in my garden of
which I had previously sent him
specimen fronds and that he
could have it to examine if
he wished. He informs me that
he has sent the specimens to you
for examination and gave me
your address. I make the same
offer to you if you would like
it and I can manage to
lift it as it is probably frozen

in. I have found this fern in
several places

I would like also to know if
he included in the fronds sent
an odd form of *A. Thelypteris*
(*A. novaborensis*?)

Yours truly

Raynal Dodge

Newburyport

Mass

H

Newburyport 8-7. '93

Mr Davenport.

Dear Sir;

Replying to yours of today
I would state that Saturday
the 12th would be entirely agree-
able to me as a day to make an
excursion in quest of my hybrid
It will be necessary however
to make a little change in
your programme.

I have never found but five
plants outside of Boxford

and those I have taken up
I have found in Boxford
some fifteen or twenty of
them in fact I found nine
at Crooked Pond last
week taking five and leav-
ing four and I think If
I should go there for that
express purpose that I could
find quite a number

So then if you take the 12.15
train on the western division
for Topsfield I will take the
11 from Newburyport for
the same place and await
your coming at Topsfield
depot

It will then be necessary
to hire a team or a team
and a driver at Topsfield
and drive to Crooked Pond
three miles.

Returning a train runs
through Topsfield for
Baston about 6.15

Yours truly

Raynal Dodge

Newburyport 9/17 '93

Friend Davenport.

I have been over into Seabrook woods to day. I spent from 8 this morning until dark looking up the odd form of Nore Thelypteris? And by the way: I answered one of your questions wrongly last Sunday when you asked me where I first noticed this fern about 12 years ago. I should have said in Seabrook Woods instead of Galisbury. I have a frond yet which I collected at that time.

I went over with the determination to collect all the intermediate

forms I could find but curiously enough I failed to find any Seabrook woods is a fine locality for this fern and perhaps we would have been justified in trying to get there last Sunday and I should have attempted it if Dr Noyes had not been anxious that we should visit his locality. I went first to the locality where I first noticed it but the woods have been cut off in that particular place within a few years leaving the fern still growing there in a wet sunny place.

Now you are well aware that the natural conditions of this fern are wet and shade I consequently found that it put on here a quite different appearance.

In fact at first sight the fertile fronds reminded me quite strongly of those of *Thelypteris* but on further investigation I found them to be very different from the *Thelypteris* which was growing amongst it.

1st Because although the margins of the pinnae were somewhat reflexed in some cases considerably so yet the main difference was that all the pinnae were conduplicate both in the sterile and fertile fronds giving the sterile fronds much the appearance of *Asplenium Filix-femina* when growing in the sun. Now the pinnae of *Thelypteris* were perfectly flat in both sterile and fertile

fronds the fertile fronds merely having the edges of the pinnules turned over in these pinnae which were fruitful.

2 The lowest one or two pair on both fronds were reflexed, elliptic lanceolate and much shorter than the others. whilst in *Helypteris* they were all in the same plane lanceolate and about the same length as the others

3^d. There was a great difference in color. The fronds of this fern are dark green, those of *Helypteris* are light bluish green. {Color unreliable 9.82}

4th In larger size of the indusia which were however not quite as large as when the fern grows under natural conditions.

I think too that the new fern has more sori but I have

not yet counted them under
the lens.

5. In the greater number of fer-
tile fronds. Whilst there are
about as many fertile as sterile
fronds in the new fern in
T helypteris there are many
more sterile than fertile ones
6 I did not find a single
case in the *T* helypteris of
a sterile frond being partly
fertile whilst in the case
of the new fern there were
fronds with a few fruit
dots on very many of the
plants. The sterile and
fertile fronds of the new
fern looked much alike. but
the two fronds of *T* helypteris
were quite different from
each other

7th. A difference in the time of fruit maturity I should think of *Thelypteris* was 10 or 12 days ahead of the other.

But it is getting late and as I have more to write you you may expect another letter in few days. I spent several hours making these observations going over quite a piece of ground and failed to find any ferns which did not satisfy these conditions and concluded that whatever this fern is it did not there in a favorable situation run into *Thelypteris*.

R. D.

Newburyport 9/22 "93

Friend Davenport: To further discuss the points of difference between the odd fern and A. Thelypteris both growing ~~in the~~ exposed to the sun.

8th The veins in Thelypteris were nearly all forked in the other nearly all simple

9th Spores of the odd fern are light brown of Thelypteris nearly black quite so in masses (I send slide enclosed in package by express. Slide has Thelypteris spores in one half the cell and spores of the other fern in the other half)

10th A. Thelypteris has more fruit dots to each pinnae. Taking the

pinnae about in the middle of the fern and the pinnales about in the center of the pinna in both cases: where *I* helypteris has 6 or 7 fruit dots the odd fern has only 4 or 5. The fronds of *I* helypteris are thicker. I have been measuring quite a number of fronds of each fern with a micrometer calliper measuring the lower pinnae of the sterile fronds. *I* helypteris measures about $5\frac{1}{2}$ thousandths. The odd one $4\frac{1}{2}$ thousandths and None about 4 one thousandths which is just about the thickness of the paper which the Boston Globe is printed on. Now .001 of inch being equal to .025 millimetres

$5\frac{1}{2}$ thousandths or .0055 = .1375 mm

$4\frac{1}{2}$ " " .0045 = .1125 mm

4 " " .004 = .1 mm

I think these dimensions are approximately correct.

Not thinking to obtain roots of the two ferns I am unable to compare them.

In the bundle I send you No 1 is that variety of *Asplenium* *Felix-femina* which grows exposed to the sun in dry places and which I have been in the habit of calling variety *rhaeticum* and No 2 are specimens of the odd fern growing in the sun with the pinnae folded together. I think that the resemblance between

them is very striking.

No 3 specimen when I first obtained it was similar to No 2 but taking it out from my portfolio Tuesday evening where it had laid since Sunday and placing it on the table I noticed ~~it~~ in a minute or two that the pinnae were unfolding in a curious way and in a short time they were most of them laying flat at which I was much surprised. When I found that it worked in that way I kept the other one under pressure. I do not know in what condition the other one (No 2) may be in when it reaches

you but when I send it all the pinnæ but the upper ones are unduplicate.

Perhaps this one may unfold also if relieved from pressure and exposed to the atmosphere of a warm room.

No 4 is specimen of *Thelypteris* growing beside Nos 2 & 3 and No 5 is the New fern growing a few rods further on in the shade of trees.

Probably other distinctions between the two ferns might be made but I think that I have said enough to show that the two ferns are not allied except in the possible case of hybridity.

As relates to any differences between
this fern and *Thelypteris* when
both are growing in wet shades
although as of course you are
well aware the new fern grows
most thriftily in the shade yet
I could find no fertile fronds
of *Thelypteris* in that situation.
Abundance of sterile fronds
but no fertile ones.

It only remains then to discuss
the relations which this fern
bears to *A. Noveboracense* which
perhaps I may do at some future
time if you care to listen.
My object in writing to you
in this way is not to interfere
with your work at all but merely
because I thought that I
had ascertained some points
and wanted find an apprecia-
tive listener.

And now I want to speak to you on another subject. Do you remember in the letter from Prof. Eaton which I showed you that he said he had suspicions that there was a hybrid between cristatum and Goldieanum. Well, last August when I ~~went~~ ^{went} to Mt. Holy. I was obliged to wait 4 or 5 hours for the train at Millers Falls. So I struck off into one of the swamps there and in looking about among the Goldieanus and cristatus I think that I found that hybrid. The leaves were not in ~~very~~ very good condition but Dr Noyes was so taken up with them

that I let him have them
The roots however I brought home
and if they come to any thing
next year I will send you the
fronds. ~~He~~ Perhaps if Prof.
Eaton is not going to investi -
gate the subject you might get
help from him if you care to.

Yours truly

R. D.

Newburyport 1¹/₂ "93

My Dear Mr Larenport.

Shortly after my last communication was made to you, I paid a second visit to Seabrook woods, obtaining considerable material and making some reflections. I have been lately looking over the material and adding somewhat to the reflections and I propose now to give you the results so far as they may relate to the fern which I have been calling the odd form. I took a somewhat different direction this time, going to Folly Mill Woods (See Whittier's "My Playmate" verses '9815) and found that there this fern is very abun-

dant. In fact of the three forms this seems to be the most common I found there a large space where the woods had been cut off in what had evidently been a wet place but the heat of the sun had dried it up and here the odd fern was growing in abundance together with *Thelypteris* & *Novea*. I notice however that this fern only comes to perfection in very wet shady places in fact it seems as if it were necessary that for a good part of the year its roots should be in the water.

Thelypteris also needs water but also sun. I notice that when growing in complete shade *Thelypteris* runs pretty much to sterile fronds. As regards *Novea* although it does very well in shade on wet soil I find it growing in quite

dry situations.

Till I could find there ferns growing pretty near each other.

Now I found this fern as before said growing in the sun in masses with the sterile fronds pretty much dried up and blown away but the fertile fronds were still standing with their pinnae nearly all conduplicate like specimen I sent you before

At that time I sent you a specimen of odd form with conduplicate pinnae and one of *Thelypteris* with pinnae having only revolute margins both growing under the same conditions.

Now I send you similar speci-

mens of the odd one together with
one of Nove growing in the sun
and collected at same time and
place.

You see that the Nove is scarcely
affected by its exposure. The odd
fern evidently feels the ~~off~~ effects
of the sun's light and heat to
a much greater extent than Nove.

Going further into the woods and
selecting a place where the three
ferns grew near each other I
dug up a lot of their rootstocks.
Nove and the odd one were here
growing about ten feet apart
with thelypteris very near and
as far as I could judge grow-
ing in the same kind of soil.
I send you specimens which
you can compare with yours.

The thelypteris roots are shiny black
with black root hairs and send out
long runners.

The rootstocks of Nove are brown
with brown root hairs and shorter
runners.

The rootstocks of the odd one
are brown with very short runners.
Neither does the main stalk lengthen
much from year to year and
the bases of the former years stalks
seem very persistent.

I went down to Pettingells Swamp
one afternoon since I was in Sea-
brook, ~~and~~ to a spot where I knew
that some plants of this odd fern
grew, and verified these results,
as I thought completely.

I noticed in places where the odd fern grew in clumps so that the fronds supported each other that the normal position of the two lower pinnae was deflexed and brought round just at right angles to the rachis; but when the fronds were declined the upper angle between the rachis and pinnae was increased just enough to keep the pinnae horizontal in both planes, which I take it is caused by the action of light I have noticed the same occurrence in some other ferns. in *Osmunda cinnamomea* for instance

Another thing I noticed was that the dark color of the thelypteris root extended up into the rachis so that with-

out looking at any other part of the fronds, I could distinguish thelypteris from the odd one by this mark alone.

I notice in looking at the ~~odd~~ sori of *Nore*, thelypteris & the odd one with a power of 60 that the indusia of thelypteris are minute and smooth if *Nore* minute with glandular edges and if the odd one much larger and glandular nearly all over. The sporangia also larger and longer stalked.

Sporae in odd one much brighter colored than in *Nore* whilst *Nore* spores are lighter than those of *Theleypteris*.

An other point of difference between Thelypteris and the odd one is that whilst the pinnae of Thelypteris are often considerably recurved those of the odd one are at most not recurved more than those of Nove.

I have been looking over fronds of the odd fern and those of Nove. after forked veins.

Although I find some forked veins in fronds of Nove especially in the basal lobes yet in fronds of the odd one I have not been able to find as many as one. Perhaps you may have better luck.

Another point of resemblance between the odd fern and Nove is that both have the lowermost pinnae deflexed although in ordinary Nove these pinnae

are so small that the fact does not attract much attention I have never noticed any thing of this sort in Thelypteris

In looking over great numbers of these odd fronds in Geabrook that day I must confess that I found a few which I was uncertain where to place.

These fronds would have perhaps two pairs of lower pinnae both deflexed and both pairs would be elliptic lanceolate but not as much so as in the case of the odd form the lower pairs being sometimes considerably smaller than the upper ones and sometimes not.

The fruit dots too would be intermediate in size between those of Nore and those of the odd one.

We might of course consider these to be hybrids. No doubt they were hybrids if hybrid is the right word, but it seems to me on the whole that the facts which I have given warrant the belief that this fern is not *thelypteris* and not an intermediate form but that with the exception of a general resemblance in outline to *thelypteris* (which although it amounts ^{to} but little has deceived our predecessors) it is really Nore intensified. The elliptical lanceolate forms of the pinnae one half or two thirds up the rachis was very marked in the specimens

which I collected in Te abrucci and I still think that the loss of the lower most pinnae in the Nore fronds and ~~the~~ consequent change in outline of the ~~fronds~~ has caused ~~the~~ from nearly all the pinnae of the variety to take on ^a elliptic lanceolate shape or at all events has made that shape more pronounced.

I would remark that although the margins of the odd fern are somewhat revolute in cases where it grows exposed to the sun yet I notice the same condition and to the same extent in some fronds of Nore.

If you should come to agree in the main with my con-

clusions, Professor Eaton's definition of Nore which we have been so long accustomed to - lanceolate in outline - tapering both ways from the middle - lowest two or more pairs gradually shorter - indusium minute - margin glandulariferous - will need revision.

When I made my last visit to Seabrook I went by way of Merrimac to look up a plant of marginale + cristatum which I knew of and found two more one of them however being in infancy. I secured the roots & stalks and I want you to see the fronds from the small one. I gathered some small

fronds of marginale and some of cristatum of about the same size and would like to have you see the three beside each other.

I also pulled up a good many marginale and cristatum roots and brought home quite a number together with their fronds but although the hybrid was our first subject still my attention has lately for some reason been directed more to this odd form.

But as this will probably be my last communication on that subject until I hear something explicit from you, I intend too look over my hybrid material in the near future and I was thinking that if

your views and mine should coincide that perhaps it would be as well to publish an account of this odd fern first and to let the other one rest for awhile.

There lives and flourishes in our city a german druggist Karl Castellum by name a man of considerable scientific attainments especially in the lines of chemistry and botany. I was speaking to him about this hybrid fern and he said that he should like to see specimens.

I wanted that he should also have specimens of marginale and cristatum for compar-

ison and so leaving the ship at 4 o'clock on a Saturday afternoon about three weeks ago I took the cars at the ship door and rode about two miles to the further end of the city and went to a spot where I ~~had~~ knew that marginale grows.

And in looking after those marginale friends I found another hybrid of whose existence I never suspected.

The boy who went with us that day to Seabrook recognized it at a glance and said he "That is a Dick"

When we get these two cases from the docket I intend to send you specimens and let you tell what they are.

As I view the case now it is a very interesting one of hybridity. I found only one plant but I brought the rootstock home with me and planted it after taking off the fronds.

I also want you to see my specimen of *Boottii* and *spinulosum* growing on the same rootstock which I think I have somewhere in my file.

I believe that I did not tell you that I had been over to Chelucco swamp since I saw you and looked about for the odd form but although the location seemed to be a good one and Nore and the lypten's plenty yet I could

not find a scid of the odd one. Neither have I been able to find it in Boxford or Ipswich.

Raynal Dodge

X

1

Newburyport 11-5-'94

Mr George C. Taverne,
My Dear Sir:-

your letter of
Oct 30 received and read with pleasure.

I have come to same conclusions
as you regarding the fern that I
have called the odd Nerve ~~though~~
through my examinations of the
fern during the present year
and that the few and in most
situations very few cases of
running together are the result
of intermixing.

Your name for it is good but
when I considered it a variety
I used to think of *umbrohumidalis*

As regards the hybrid, I am well aware that in the cases of Carex
Palustris and Potamogeton your method of indication has been
quite the proper thing of late
but have not known of its
adoption in the ferns

Have any of the ferns of
North America been indicated
in this way.

Does any one write *Camptosorus*
rhizophyllum \times *Asplenium ebenum*
for ~~A.~~ *A. ebenaoides* or *Asplenium*
trichomanes \times *Asplenium ebenum*
for *A. parvulum*

Now this hybrid occupies the
same position as regards cristatum
and marginale that *A. Bootii*
does to cristatum and spinulo-
sum but is Bootii anywhere
described as *A. cristatum* ^{*spinulosum*} ~~var. *marginale*~~

When Prof Coker named A. Bradleyi
did he not know as well as he
~~did~~ does at present that it was
a hybrid between *reticulatum*
and *mentarium*.

If the manner of indication
which you mention is to be
adepted why has not it been
done with the ferns which I
have mentioned whose character
has long been known.

They have all received a distinctive
name and why not the
same in this case?

I have also found *A. simulatum*
in several other places this season
two of them being well known
to you viz: Cedar Pond in Wenham
and Chebacco Pond in Essex
but the stations were small and
I could not find it at all in

the neighborhood of Warren, R.I.,
although I looked in several likely
places.

Your notes on the Mexican ferns
received.

I would like to have 25 extras
of your description of the New
ferns and am willing to pay
whatever charges are made

Raymond Dodge

Let me give you a few thoughts which have passed through my mind since writing my note

I wonder if the fern you have called *Dryopteris simulata* is not the North American representative of the European *Noceraea cens*? I wonder if they are not both descended from the same stock and if they will not get further apart as time rolls by.

I wonder how far north the typical *None* grows. Not far I should judge for it is late in fruiting.

I wonder if the typical *None* is not an introduced plant here or rather an adventitious one.

I wonder if our beeches and ~~be~~ birches and ~~other~~ many other

which have been given distinctive names differ from the European forms more than this. *Simulata* does from more.

I wonder if the illustration of *Asplenium thelypteris* which is given in Anna Pratt's Ferns and Flowering plants of Great Britain is any thing like the European form of the plant. Two small pinnae for the lowermost ones.

If that is so our *thelypteris* is not like theirs.

And finally I wonder where I can get specimens of *Asplenium ebenoides* and *Botrychium lunaria* of New England growth. Underwoods in the Native firs and their allies give them both from the New England states.

Dodge

X

Nantucket 1-19-95
Mr George E. Davenport

My Dear Sir:

Your separates received and my
only excuse for not acknowledging
their receipt is that I received a few
days previously some separates from
the Gazette office and so ubiquitous
arrived it did not so much attract
my attention although at the time
I had given mine all away
Thanks for the same
The only criticisms I have to
offer on the article are that you
give Seabrook as being in ~~New~~
Massachusetts instead of New
Hampshire and that you take
the grounds that hybridism

in ferns is a rare occurrence in
nature, whereas I think it to be quite
common

I have accumulated quite a fund
of evidence on this point some
of which I think is going to surprise
you

I wish you would bear in mind that
I would like to obtain *A. ebenoides*
and *B. lunaria* if I had these
and *Selaginella sibirica* and *sibirica*
and *Equisetum littorale* I should
have a complete collection of
the vascular cryptogams
of New England and ninety eight
species and varieties

Underwood in his "Ferns and
Fern allies" gives both *ebenoides*
and *lunaria* from Connecticut
but I do not know his authority

Much obliged for the credit
you give me in the article in
the Gazette.

Yours truly

Raynal Dodge

Newburyport 4/28/95

Mr George E. Davenport

Medford

Mass.

My Dear Sir. your note of March 30
was duly received and I feel the
force of your remarks regarding
the disinclination of Mr Meehan
and other botanists to admit the
hybridity of ferns but I know that
it is a fact of very common occur-
ence.

Mr Meehan in his Native Flowers
and Ferns of the United States
Series second. Vol 1st page 113
gives an ~~an~~ illustration of *Asplenium*
ebenoides and also an account
of the discovery of the same

and a history of Mr Scott's attempts² to attract the attention of botanists to the plant in which it seems he was for a long time unsuccessful. He then goes on to say: but I quote Mr Meehan's own words
"This little bit of history has its valuable lesson. It teaches the student to search carefully for facts and when he himself is sure of the facts not to be too easily disheartened because others do not at once see things as he does"

To be sure Mr Meehan has only half learned ~~the~~ the lesson which he himself gives out for he thinks A. ebenoides to be a species and gives his reasons for so doing but his philosophy is good

By the way it may benefit you to have a look at the illustration in the volume of which I am speaking

I think you will see there the

lopsided don't know what to do 3
with itself look which is seen in
so many plants of *A. eris*. margin.
I have been very busy this season and
have not had as much opportunity
as usual to make excursions but
still I have been about some and
have kept my eyes open and
have received a number of good
specimens by exchange.

I think now that I can ^{easily} distin-
guish the *Bottii* which is formed
from *cristatum* with typical
spinulosum and the one ~~one~~ which
is formed from *cristatum* with
intermedium and I have
got possession of all probable hybrids
in the genus *A. spicatum* which
grow in the Eastern states except
ing the one which is formed from
Golideanum and *marginalis*
which I have never yet seen.

I had some friends sent me this
spring by a lady in New York
state asking me what I supposed

they were I took the friends just as I received them and showed them to the boy who accompanied us over to Seabrook woods. I asked him to name them and he said that is a Dick Goldie annual spinulosum which was the conclusion to which I had come

You probably don't take much stock in what I have written but in my investigations into hybrids I have run across some facts which have a bearing on a published opinion of yours

Why do not *A. spinulosum* typical and *A. spin intermedium* mix together more frequently if they are of the same species? They do mix but not as commonly as *cristatum* with either

How is it that *intermedium* forms a *ciliolatum* variety just as typical *spinulosum* does. I had never seen genuine *ciliolatum* until last autumn when I discovered

ered it in Hennings ton N.H. and ⁵
was much surprised at its appear -
ance. Can send you ~~a~~ specimens
illustrating what I mean if you
would like them

What is intermedium interme -
diate between. It surely is not
intermediate between spinulosum
typical and dilatatum. It seems
rather to me to mere parallel
with it

Is it not likely that spinulosum
is an introduced form whilst
intermedium is a form that
has been thoroughly American-
ized

I struck a patch of *B. matricariae*
folium last week that would
do your eyes good. It was a bit
late for good fruit but the
size of the patch was a wonder
to me. It was about two rods
wide and 30 rods long and
the plants were so numerous
~~a~~ nearly all over it that it

was impossible to step without crushing from two to a dozen of them. Some of the plants were fifteen inches high and they would have been in full fruit I should think about June 15.

The same day I discovered another lot of *Brychium* growing in sphagnum-amongst this tall *Couleea sensibilis*. The plants were all about 2 $\frac{1}{2}$ inches high not mature very simple in structure having about four sporangia on each side of the fertile part whilst the sterile part was uniformly three lobed with ~~the~~ its tip bending down over the fertile ~~part~~ which was not reflexed. According to your rules it seems to have been *B. lanceolatum*. but it seems to me to be a curious kind

I have raised Clarence Lour
in New York and Ma Adam in
Caanan Ct and they have both
promised me to ~~to~~ look for
A spleenium ebenoides but I don't
suppose that I shall get any-
thing out of it

Raynal Dodge

J

X

Newburyport Mass 3/26/96

Dear Mr Laverport:-

You note
of Aug 13, 1895 was duly received;
also recently and except or-
nomenclature from the B.G.
I judge from your remarks
that you have about given up
the idea that *A. spinulosa inter-
media* is a distinct species but if
you have I have not. This dilate-
d form of *intermedia* is some-
thing more than a mere varia-
tion. I could show you two
hundred plants growing
together and every plant would

2

have dilated pinnules some of the
pinnules being 4 and even five
inches long. I believe that most
of the variations come from mixing
with typical species - which is
not very usual. I can't understand
how it is ~~that~~ that all our trees
and nearly all of our native flow-
ering plants are distinct from
the European sorts when we have
so many of the Fideiniace common
to both continents. I suspect that
some of these things have been
planted unknowingly.

Please give me further information
about this book you speak of. viz
"Loses fifty years in fern growing"

I have not been following up
my investigation on the Aspidium
hybrids but have not given the
subject up at all

The fact is, last season I started
in collecting the Isoetaceae

If you see the "Guinean fern"³
bulletin you are probably aware
that it is intended in the July
number to have a "symposium"
on *L. simulata*. (They are determined
to call it Dryopteris) Now the
editor of the publication has
written to me asking me to
contribute. He also writes that
if he could get a good drawing
he would give an illustration
of the plant. It occurred to me
that you wrote something about
a drawing of this plant which
you at one time was having
prepared and I thought that
I would consult you before
replying to him. As the number
of the bulletin is not to be published
until July, perhaps a photograph
of plant taken say June 10 would
answer the purpose.

4

and before the ponds froze up
I managed to get about two-
thousand plant and a friend
whom I interested in the subject
collected about twice as many
more. He moreover having
much spare time at his disposal
has corresponded and received
plants from about every one
in the country now living who
has investigated these plants
and I think that we will
shed a little light on this sub-
ject before long.

I intend to pay more attention
to the Aspidium this season.
We have discovered a new
species of Isoetes at Trichling
Falls about a dozen miles from
this place & and I had intended
to have published an account
of it before this time. It is a
very striking species

Do you include the fern allies
in your collection at Horticultural
Hall. I send you ~~to~~ check
list including the N. A. species in
which I have marked those which
I may be expected to furnish you
if you want any of them.

I am going up to see that
"dried garden" of yours. Perhaps
I may have some plants
of even the ordinary species
which would be an addition
to your collection.

I intend also to look over
some of the ponds in your
neighborhood this season
after "fullerets" and especially
I want to find that *G. lacustris*
which is reported from Fresh
pond.

Yours
Raynal Dodge

1

X

Newburyport 5/25/96
Friend Davenport:-

I have got
a nut to crack and a thick shelled
one. I am probably to write
for & late a list of the vase-
line cryptogams of New Eng-
land arranged in the order
of their fruiting said list to-
be complete and including
all the important varieties.
The Manual as I long ago
found is not reliable in this
respect being very indefinite
and often at fault.

Now this pamphlet possibly will
have considerable circulation

in this section of the country and
the question arises as to what I
am to call the plaguey things.
I tell Mr Glute that if I adopt
Underwood's nomenclature
you will feel like giving me
a thrashing the next time
you see me. I have been
thinking that perhaps I could
adopt an intermediate course
by giving both names in
cases where required. What
do you think about this.

At any rate I mean to include
A. criss marg. in the list
No I never sent Mr Underwood
any specimens neither did I
ever correspond with him on
the subject but I did last
summer inquire from
Mr Glute why he had omitted

the hybrid form from his list, to which he replied that it was because Mr. Blackwood had decided that it had better not be included and I let it go at that.

Yes, I should much like to go ~~on~~ to Medford and spend Sunday with you and will make arrangements with you in a couple of weeks.

In my notes on *A. simulatum* which I have written for the Bulletin I give a short account of my sending the first specimens to Prof. Eaton and with them friends of the hybrid and say that "he decided that they were undoubtedly friends of a hybrid between *A. cristatum* and *A. marginale* and advised me to publish a description of the plant."

I think that I showed you
the original letter when we were
sitting in Creeked Pond last
Ecluse by the way is to make the
drawing for A. simulatum him-
self. I am to send him specimens
for the purpose from my her-
barium. I wish that he had
fresh plants to work from
as I should like to have him
see the reverse position of the
lower pinnae but simulatum
at present is represented in
this section by little green
balls on stems three or four
inches long whilst Nere
and Thelypteris growing
within a few feet of it are
about a foot high. I went
and had a look Saturday
afternoon

I will send you plants of
Isocoma Eatonii when I get
more but my stock at present

is quite limited and the locality Trichling Falls New Hampshire is nearly inaccessible from these parts. I expect however next July to make a trip up there and will be sure to remember you. I forgot whether I told you that I have named it for Mr. Alpheus A. Eaton of Leaburk N. H. who first attracted my attention to it.

I do not want you to think that when I offered to give you specimens of fern allies for your herbarium that I meant it as a hint for you to give me ferns for that was furthest from my mind at the time.

Raynal Dodge

~~9~~ I consider Mr. Dodge's plant to be
~~Fragaria vesca~~ ; and the difference
is no way different from specimens
we have collected and described.
G. L. C.

* Newburyport Aug. 1896

Friend Carpenter,

I send by same
mail as this plants of the new
Lilywort. Thus far we have
only found it on the "Flats"
at Pon on Station East Kingston
N. H. where it grows in considerable
abundance and is probably to
be found in similar situations.
These flats are a level piece of
fresh water marsh as far as I
have explored should say it
was about $1\frac{1}{2}$ miles long and
a half mile wide with Ponow
river running along near the
middle of it.

The other species of Isoetes growing there are *ectinaesphaera Braunii*, *ectinaesphaera Borlui Engelmanni*, *rifaria* and this one besides another which I have not as yet sufficiently studied.

This species (Baloni) which I call after Abu Alau N. E. Eaton of Peabody N. H. who first described it is found in ~~the~~ situations which are covered with water from November until about the middle of May during which time it grows these long leaves usually about 18 inches sometimes 24 inches and in one instance 28 inches long. As the water recedes the long leaves being left exposed to the air and sun die away and are succeeded by shorter ones about six or eight inches long and the plant continues to grow

there leaves and fruit all summer.
It is to be noticed that the
plant does not fully mature its
spores until the long leaves come
off and the plant is exposed to
the air; consequently the macro-
spores on the long leaved plant
I send may not have the sculpt-
ture on the macrospores well
defined but on the shorter leaved
specimens they will probably
be found mature. These macro-
spores would be considered
very small even in the smaller
species of Isoetaceae. They are
of remarkable shape and of
peculiar sculpture. One plant
was found having a "bulb"
 $2\frac{1}{4}$ inches in diameter and
having 175 leaves, making this
the largest of the North American

species and probably on the whole
large than any described by
European authorities.

I am sorry that
I disappointed you in June
but the fact is I was busy
and unavoidably detained
here in Newbury past the last
three Sundays in June

Yours very truly

Raynal Lodge

P.S. Impressing the specimens
I send it is best to cut them
in two the shorter way if the
bulb change dries several
times and it necessary to
bend the leaves bring ^{them} ~~are~~ fragile
around in a curve as when green they

✓

Nantucket Aug 5 1896

Friend Taenfert:

You say that you think my new guillwart to be *S. Engelmanni*.

You gave it a too hasty examination. Perhaps you examined the spores when green. Nothing can be learned in that way.

As I have collected and examined many hundred plants of *S. Engelmanni* I think that I have got to know it by this time.

Moreover I find no account of its growing places

18 inches long and with a bulb
2 $\frac{1}{4}$ inches in diameter like one
of this species which we found

I recognize at sight when growing
Tropaeolum, *Tuckermania echinospa*
Bramii, *echinospa* *Boottii* Engelmann
and *Elatini* and I think that that
is well as I can understand and do
The longest leaves on any specimen
of *Engelmanni* which I ever
collected were 16 inches

I could just here
write a good many pages giving
differences between *Elatini* and
Engelmanni but instead of so
doing I am going to enclose in
an other envelope two dried
plants one each of *Engelmanni*
and *Elatini*

I shall also send a couple of wooden sticks containing spores of these plants and cover the holes with a piece of paper. By cutting through the paper you can gain access to the spores which will be loose.

In order to render the affair more certain I will send *Engelmannia* from several localities but I cannot well spare more than one plant of *Elatini*.

Another point in this connection is that I sent you plants taken from the water but *Elatini* does not usually have well matured spores until the long leaves fall off and the sporangia have access to the air and sunshine but I am ready

5

to be judged by the plants of
last autumn which I now send.
You may hear something further
concerning Tuolumne and later
on and you need not be surprised
if you hear of another "guillotin"
from this locality before Christ-
mas.

Very Truly yours

Raynal Dodge

P. S. Please notice that the spore sculpture
is labyrinthiform convolute instead of form-
ing a net work like Engelmanni; that
the spores are much smaller and that the
commissure are very wide in some speci-
mens spinulose and that they form
very small angle with the equatorial
plane. Use an inch lens and a compound
microscope. Let me know your

X

Newbury port Mass 8/14/96
Friend Daven port,

I am very sorry that you can not accept my quillwort as new but fortunately it has been accepted by every one else interested in the family to whom I have sent specimens.

Since last spring we have sent out about fifty plants to various individuals some of them experts and yours is the first objection I have heard to accepting this as a good species

Yes I have two copies of Engelmann's monograph

one pretty well used up.

I was aware of the dimensions Dr Engelmann gives for *E. Engelmanni* but they are not as large as are mine and besides the dimensions refer to his var. *valida* which has never been found nearer than Delaware.

I have a plant of this from Warriors mark Penn. but it is not at all like my plant.

Remark the thin fragile laminae forming the sculpture of *Engelmanni* "delicate as honey comb reticulated" to quote Dr Engelmann and then the twisted convolute thick walled markings on *Catuni*

See the commissures perfectly straight whilst Engelmann expressly says of the family that they are curving. Notice also the low angle with the Equator

These differences between the two plants are only examples there being ~~the same~~ similar ones in their internal structure but I can not go into that subject now.

I forgot to mention in my previous letters to you that this plant is dioecious

I am sure that you are on the wrong side of this question

P. Engelmanni grows with this species at East Kingston as a rule however growing nearer the water

but I go along and separate
them by eye.

By the way none
of the plants I have sent you
contain any microspores that
is they are all female. Any plant
of *F. Engelmannii* you may
take you will find to have
microspores in abundance
unless it is very small. This
is a good way to distinguish
the two species.

I think that I
know a little about the Isoetaceae
of this region. I have read three
of Brauns works in German
which I read nearly as well
as English and I and my
hard have about five
thousand plants of this
order which we have collected
during the last three years.

and most of which we have examined. Moreover we have plants of all the species described as growing in North America besides a few from the South as yet undescribed.

I do not find that Dr Engelmann cautions against distinguishing species by the sculpture except in the case of microspores.

Another point I wish to mention is that in my opinion there various species of Isoetes as described and limited by Engelmann to a certain extent mix together but I have never

noticed anything of the sort with
S. Engelmanni. It is always
Engelmanni even when growing
among other forms and I consider
it to be the most constant form
we have never varying much
from Braun's description
or varying at all except in
size.

I send ~~on~~ by some mail
a photograph of *S. Eatoni*
the plant being pictured in
its summer dress the vacant
space between the bases of the
new leaves and the outer edge
of the trunk being occupied
by the long winter and spring
leaves. The sporangia remain
to a considerable extent after
the leaves have decayed down
to their bases.

This reminds me to say that whilst last bundles can always be found in the leaves of Engelmann this is not the case with Eaton's many leaves and in fact many plants being destitute of them and curiously enough this conflicts with Dr Engelmann's classification.

An interesting discovery I have made is in relation to the composition of the integuments of the microspores. Engelmann, Braun, The Micrographic Dictionary and other sources of information which I have examined give the impression that this "chalky white crust" as Engelmann says, is organic or calcareous but with

the assistance of our local chemist I think that I have demonstrated that they are pure silica or nearly pure.

I have written an article for Blute on the Isoetaceae of this region in which I discuss this subject further. See next copy of the Bulletin. I can send you a set of Isoetes of this region if you would like them.

This is probably as long a letter as you will care to read but there is another subject I would like to mention.

You probably noticed in the last Bulletin that I was to write a little sketch of the vascular cryptogams of New England. I have finished

writing up the allies we have
got into the genus *Aspidium*
in the *Filices*. When I get
A. simulata and *A. cris & marg.*
written up which will probably
be in a few days I propose
sending a copy to you to
find whether the descriptions
meet with your approbation.

With the highest esteem

Raynal Dodge

The spore with indistinct semiglobose
nearest the top
the one to the left on the photograph
had its siliceous coating removed
by the action of caustic potassa

X

Newburyport Aug 22 "96

Friend Davenport.

I have been looking over the "Flora of Middlesex Co." a copy of which you kindly sent me some time since and I notice that there are three omissions of Vasc. Bryt. in the list ~~at least~~ whose places I think might perhaps be filled. I refer to *Equisetum litorale*, *Equisetum scirpoides* and *S. Engelmannii gracilis*.

It occurred to me that perhaps you or some one in your vicinity interested in Pteridophytes might perhaps like to hunt them up and I am going to give you a few hints from my own experience.

Equisetum litorale although given both by ~~W.~~ Gray and Underwood as occurring in New England in Vermont (Shores of Lake Champlain) is in this neighborhood one of the most common forms in the whole order. The banks of the Merrimac are lined with it and it extends up into all the inlets and small creeks. The authorities in this country have evidently got most of their information from Milde in his "Monographia Equisetorum" but I find Milde does not describe it right as I make it out. He says that the spores are always abortive but the fact is this plant produces three kinds of stems, one the normally sterile running to a long point

that is to say with a long caudate
acumination. This is the stem
~~of~~^{any} by which it may be recognised
at ^{any} time in warm weather growing
in such situations as Linseed
grows. I think that you would
find plenty of this growing
on the shores of Charles river.
The stems producing abortive
spikes quite numerous grow in
among the others often in mud.
You will find them with
these immature spikes about
the latter part of May and
continuing until nearly July.
These stems are about 18 inches
long when well grown a few
inches shorter than the normally
sterile ones. The third and
fertile stem I have ~~not~~
found growing only in

sandy wet soil: they are rather few in numbers 6- 12 inches high and their time of fruiting is quite limited about June 1st

I think that you can find this thing in your region

Equisetum scirpoides of which we have found a good locality in Amesbury grows there on a springy bank in the shade of hemlocks and inquiry from several correspondents leads me to think that those are the conditions ^{under} in which it to be searched for. You have plenty of hemlock (*Tsuga Canadensis*) in your neighborhood and probably also the springy banks associated with it

Prof C. Osten is mistaken I think
in giving the time of fruiting
for this species as midsummer.
I saw it down year after year
being always too late until
I finally found it in fruit
the first week in May about
the same as *Equisetum arvense*.

Dr Engelmann gives
the location of *Isocetes Engelmannii*
as ponds and ditches rarely found
in slow running streams. Now
my experience is that this species
is nearly always found in water
where there is a current. In
most places it seems to grow
in small brooks to the exclu-
sion of any other form. Very
common here in brooks.
But now all the quillworts
grow and flourish well.

List of

only in the open sun and often
growing in banks of course
some of the spores are carried
into places shaded by trees
~~water~~ and is found growing
sometimes immersed but often
high and dry on the bank
in such places growing some
times very long and slim and
with few or weak last bundles
and this I take it is Engelmann's
var gracilis. You can find lots
of it in your neighborhood
I thought I would mention
these facts to you now but
you will ^{find} them touched upon
in the next Fern Bulletin
Mr Eaton intending to give
an account therein of *E. litorale*
I send you plants of the
three species I have mentioned

although the *Equisetum* is not
in fruit my fertile plants having
all been disposed of

I will send the guillworts
later but I am sorry to say
that I did not give very
long leaved specimens of *Elatis*
sufficient attention. They have
all spiraled and as it has got
to be too late to get them
this year I shall not be able
to send you any now but
will send some to you in
their summer dress

Raynal Dodge

I enclose my abstracts in relation
to the two new ferns

X

Newburyport Oct 14, 1896

Yes Friend Davenport, you
are right in thinking that
I never sent Prof. Underwood
fronds of the hybrid fern.
I never corresponded with
him but once which was
several years ago, and in
relation to quillworts.
About three years ago I
wrote Prof. Britton asking
him some questions in
regard to *Aspidium*.

cristatum Clintonianum
He replied that they had no specimens in the herbarium and requested me if I succeeded in securing any to send some to Columbia College. The next summer I obtained plants from very near the typical locality had them compared with Judge Clinton original specimens now at Buffalo N.Y. pronounced genuine and sent fronds to Prof Britton At the same time I sent him one sterile and one fertile frond of the hybrid but no rootstock, I sent these hybrid fronds, (which were

very fine and characteristic in
fact the best I had) so that
he might see how they
differed from *Bliniorianum*.
When I told you the story
before I cut it short and
perhaps you got a wrong
impression. It is pretty hard
sometimes to make a man
see a thing as one sees it
himself. This comes often
from inexperience on
the other mans part. If you
were to take Underwood
on a little tramp and show
him the situation you
would I think make him
a convert. for there is

no doubt but your position
is the right one. I have a
friend just over the ~~at~~ New
Hampshire line whom I
consider a very acute botanist
Mr Alvah A. Eaton whose name
you may have several times
seen in the Bulletin. He had
an article on Ophioglossum
in the last number ~~the~~
he was disposed to doubt at first
but he has long since become
a convert. This book of mine
takes up so much of my time
that I have not had a
chance to get together your
Liliworts as I want to
send some slides with

them and have not had a
chance to make them
I may send you up some
proof sheets soon for criticism

Truly

Naynal Dodge

February 10th 1870

and I am going to
make a collection of
the best birds from time
and time, & will also go off
at such times as you may give me to
see what birds there are &
what they look like. I shall also
try to get the skins of
them so that I can
show you when you come
over. I believe it will be
quite difficult to do it first
however, as all the skins are
eaten by some time which
is a great pest sometimes on every
pinne. I have seen them
fowled before & found it good
success.

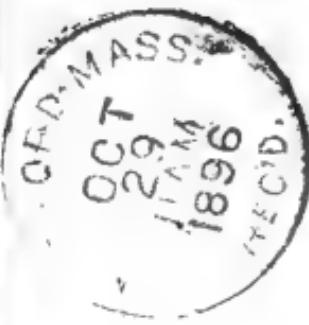
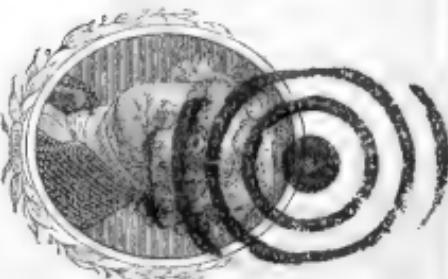
Dad,

POSTAL CARD - ONE CENT



United States of America

THIS SIDE IS FOR THE ADDRESS ONLY.



J
Y

Newburyport Nov 8, 1896

Friend Lawrenceport,

I sat down

a few minutes ago to reread your article on the hybrid fern - which by the way is a very good one - when I had a new thought occur to me which I am going to give you while it is fresh.

Mahan's remarks in Vol 1st of Series II of his *Flowers and Ferns of the U.S.* ~~that~~ in connection with his illustration of *A. ebenoides* (I quote from memory) that attempts have been made to hybridize ferns by sowing the spores very thick so that the prothallium will be crushed.

up edgeways with the idea of causing the antheridia of one prothallium to enter the archegonia of another. But he remarks that not much success has been attained in this way and says something about there not being one chance in a million of this occurrence taking place.

~~The~~ "The minute anatomy has been carefully studied in only a few of our native ferns and fewer still have been watched through the phases of their life history" (Underwood's Our Native Ferns, page 74)

"In some species notably the Ostrich Fern the two kinds of sexual organs are produced on separate prothallia so that the plant becomes dioecious" (P. 20)

What if either *A. cristatum*
or *A. marginale* is dicecious
Who has ever investigated this
If any one it is probably Douglass
Campbell. I have not access
to his book on the Development
of Ferns and Mosses but it
is quite evident that if one or
either of the parent ferns of
our species produces dicecious
prothallia that then this case
of ours become entirely clear
for there is evidently no reason
why the antheridia of one sort
of prothallium should not enter
the archegonia of another sort
and as the ferns are very near
allies they ~~would~~ would probably
fertilize it this occurrence taking
place just where we
should expect that is at the
foot of deservitis where the

two ferns meet. At any rate
that is the way I am betting
until I find out more about
it. If no one has happened to
think that the ~~question~~ fact
of dioicity has a bearing on the
hybridity of ferns I don't know
but what I shall investigate
it myself.

Respectfully
Raynal Dodge

V X

Newburyport Mass 12/9/96

Friend Davenport:-

I am glad
to see that you are moving
along towards the position
I have sometimes taken in
discussing with you the sub-
ject of hybridism. You write
that Prof. Underwood objects
to describing hybrids as not
being specifically distinct
but I am foolish enough
to think that he has descri-

bed three hybrids in Britton's
New Flora and that I could
prove it if I was circum-
stanced so that I had an
opportunity. Besides this
I know of several others
which are native to these
New England States and
have specimens of them.
The advocates of this system
of searching out the original
name and of making every
thing to conform to it are
going to find themselves
in a peculiar position event-
ually. The number of recog-
nized hybrids is going to
increase and meanwhile

some plants now considered species will be shown to be hybrids so that hybrids will have two different kinds of names. What will they do about it. Now don't you think that I am talking wild. I can form a pretty good judgment on a subject when I know all the circumstances, and the best place to find out the circumstances in this case is in the woods and swamps. Underwood I think received the hybrid from Dr Graves of New London Ct. I suggested to

the Dr last winter that he
look for it the present year
and he sent me some fine
specimens awhile ago as well
as of *D. simulata* and *T. Fisch-
ermannii* the latter of which
has previously only been
reported from your neigh-
borhood. I may at some time
join your Flora. Soc. but I
am not much of a joiner.

You probably remember
that I wrote you awhile
ago relating to the crust on
the macrospores of the
Isoetaceae being composed
largely of silica and that I
thought that it had escaped

the observation of the german
botanists. I have had some
spores analyzed and find
that the crust is about 90%
silica. Now I wish that you
would do me the favor of
copying and sending to me
just what H. ofneister
says about it. I had a person
from the city here go to
your library and look the
matter up but he did not
understand very well what
was wanted. You have ~~already~~
already been obliging enough
to consult. Campbell in the
matter and I have Tachs
~~Lehrbuch~~ which ~~not~~
~~not~~ makes no mention

of the matter. If Worcester
does but I would like to
know just what he says.
Possibly too you may have
a later edition of the Micro-
graphical Dictionary (English)
than I have which may
have some reference to it.
There is nothing in the
older edition.

The fact is there spores
sweat almost pure silica
having the appearance of
carbonate of lime and as
near as I can find out ~~only~~
~~as~~ ~~the~~ the German botanists
have not taken in the situation
I am not going to use the
photograph of *J. G. alvini*.

which I sent you. The figure of the plant did not suit me so that I have had two photographs taken which will give me fuller dissections. I hope to publish in the January number of the Bot. Gazette.

Raynal Dodge

When I say that there are three hybrids described in Britton's Flora I include neither *A. eburneum* or *A. parvulum*. That is a wretched illustration of *A. simulatum* in the New Flora.

✓

X

Newburyport Mass 12/1/96

Friend Davenport:-

it is all
right regarding Hofmeister.
My German friend here got
a copy and I have given
it an examination. I sent
in my Abs. last week and re -
ceived a letter to day from
Prof. Coulter ~~the~~ stating that
the article would appear in
~~the~~ Jan number. I think
that you will say that I.

have dissected this quillwort
in fairly good shape.

Palmer of Media Penn.
writes me that he is to have
a short article in the Dec.
number criticising Under-
wood's illustrations of the quill-
worts especially ~~the~~ of the
macrospores. Judging from
what he wrote me I should
say that his article was
altogether too fierce.

I think that under the
circumstances it would
not be well for me to
join the society of which
you speak. If I were to
become a member the

chances are that I should never attend any of their meetings I have been in Boston but once in four years and then I only passed from the Union Station to the Providence Depot.

When you wrote me that your article on the hybrid was out I wrote to the G & F people and got 50 copies ~~&~~ extras At the same time I sent 10cts asking them to send me a copy ~~of your article~~ of the paper containing your article on Simulatum as soon as it was published and also asking them

to print me 50 extras. As they did not come along I sent them another letter in relation ^{to} it. You understand that I was anxious about it because I wished to place a reference to it in the Appendix of my book and was limited for time. They wrote back that as soon as the article was published they would let me know. But they did not let me know and the first intimation ~~of~~ of its publication I received from you. Then I jogged their memory again and they sent me two copies.

of the paper but no excerpts
I received the papers Monday
and have heard nothing
since and I don't know
whether I shall ever get
any extras but you writing
that you have received
none gives me a little hope

Immediately on your inform-
ing me that simulation was
described Dec 2 I wrote to
Lute so that I got it in
the Appendix all right

Of the 50 copies of G & F
for Nov 4 I have distributed
35.

I expect that my
little book will be ready

next week. By reason of its condensed style and fine type it will not be as large as I expected probably about sixty pages and will sell for 35 or 50 cts according to binding. Don't you think that most people would prefer to pay the difference for good covers.

Fig 5 and 6 certainly are transferred in the numbers for the rootstock. Moreover ~~I~~ I have dug up a large number of the roots of these three ferns where they were growing very near each other and in the same kind of soil and I am of

the opinion that the bases of
the fronds of previous years
are much more persistent in
simulation than in the others

I refer to your use of
the word lamina in my
book but I am not sure that
I worded it to suit you

I see that Underwood
has got *B. ter. lunariales* re-
described as *B. bi-ternatum*

All to whom I have sent
your illustration of the hy-
brid fern and who were
acquainted with say that
Faxon's drawing is excel-
lent.

I believe that I have not told you that we have found *Lycopodium aleppicumoides* in Plum Island. That is I sent ~~Gator~~ down there early in Oct. for *L. inundatum* Bigelovii not having seen it there in August and he came back with the species I have mentioned. It had not matured its spores even Oct 5 the season here being apparently rather too short. I noticed that all the *Lycopodiums* were late this season. You will find more of this in the next num-

ber of the Fern Bulletin
I managed also to get this
inserted in the Appendix
of my book. W. Alphonso
Merrill writes me that in
the next Bulletin he gives
his experience with *A. eben-*
oides.

I don't know as you
will care to see a copy
of my book when I tell you
about it. The fact is that
Cleve and the publication
of Britton and Brown's
New Flora ~~have~~ and one
thing and another have
persuaded me to give
up the name *Aspidium*

for Dryopteris. I don't know
as I feel like entering the
arena in this question and
the drift of things seems
to be all Britton's way.
But I wish that Under-
wood when he decides on
a name would stick to
it. Now in this fern list
of Blunts which Underwood
is mainly responsible for
he changed the names of
four ~~Lycopodium~~^{6 quisetsus}, that is
they are unlike the names
in Grays Manual. ~~The~~
~~changed~~. He changes linosum
to fluviale. the y. in sylvaticum
and hymale to i. and

spells literature with one t as it really should be spelled. Now in Britton's Flora he has changed three of them back to the old spelling. That you see leaves me in the lurch. I notice too that in the New Flora he has changed ~~Pellaea~~ Pellaea gracilis to P. Stelleri and D. aculeata Braunii to D. Braunii. this last however being a change of a different nature. I will speak to Eaton regarding your so B.C. Soc. He would be a good addition to any botanical club.

Raynal Dodge

Newburyport Feb 1, 1897

Y

Friend Davenport:

your
notes of Jan 21 & 30 came
duly to hand. You ask
if you did not order two
copies in cloth. You certain-
ly did and I sent you order
to Blute. You do not say
what you received. If you
have received one copy
in cloth I can send you
an other immediately but
if you have received paper
covers and want two cloth
ones I shall have to

speak to Blute about it as
all the cloth covered copies
I have ~~are~~ but two are
engaged. I have half a
dozen paper covered ones.

All I have seen yet
of the article in the Gazette
is the pref. but I expect some
excerpts soon and shall
send you some. You see
I do not subscribe for
the Gazette but for the
Torrey Bulletin and ex-
change with Eaton who
does.

I notice that your
remarks in the Gazette on
the use of the word friend

are entirely in accord with
the ideas in my book. (Second *
Edition Gazette)

I don't quite agree with
you when you write that
Underwood's orthography of
the *Equisetums* are to
be considered typographical
errors. You understand
the spelling on just three
was changed for *Cleates*
list and now in the new
flora they are all as in
Gray's Manual. Or else
he is careless; as for instance
in his list of the ~~ferns~~
ferns, he found in Alabama
as given in November No.
of Gazette he mentions

Pellaea with many species.

A. thelypteroides. Now this
is one of the names he has
given up. Speaking
of *Equisetum* reminds me
of a curious discovery which
I made this winter. I
received some specimens
of *Equisetum littorale*
a year or two ago from
Eggerton the locality be-
ing shores of Lake Cham-
plain as given in Gray's
Manual. After I found
E. littorale so abundant
here on the banks of the
Merrimac I compared
the plants with Eggerton's
specimens and found

that they were quite unlike
the Vermont plants verging
towards *E. palustre*. I am
thinking now that *palustre*
mixes with *arvense* making
a hybrid just as *litoreum*
does with *arvense*. I hope
to investigate this further
at some time. ~~batatas~~

Caton is engaged now in
studying the *Equisetums*
but I have never mentioned
this case to him.

The fact is that there
are a lot of problems in
connection with the Vas-
cular cryptogams still
unsolved. New ones come

to my mind quite frequently

I think that some one ought to take these Vascular Cryptogams say in Britton and Brown's range and study them up Guillarts and all and write an illustrated monograph on the subject. I predict that a good many facts would come to light. Now is the time to do it as Eaton's work is about out of print selling for \$40 dollars a copy nothing but the figures illustrated or described and several omitted altogether I think that a man could spend two years

tine on that undertaking
and come out whole from
the sole of his books besides
gaining a reputation

Why don't some of these
people who spend so
much money on the hot
house culture of flowers
see it in that way.

Many of the species have
never been illustrated except
by figures such as those
in Brown and Britton's
flora. I don't know how
the plates of L. Eatonii look
but if they are like the
photographs I claim that
they are the best that

have been made of any species
of quillwort.

I sent a copy of my book
to the Transcript and one to
the Advertiser hoping that
perhaps they would notice
it.

Very truly yours

Raynal Dodge

* This is certainly very gracious in
the part of Mr. Dodge who is wholly
inebriate to me for the "ideas", a
fact of which he fails to make as full an
acknowledgment in his book as he
ought to have done.

George E. Daumforth

H

BOTANICAL LABORATORY,
CORNELL UNIVERSITY,

X

Ithaca, New York,
Nov. 6 1881

Mr. Davenport
My Dear Sir

I know well
enough bad poorly scientific
work, especially that which is
of no value, remunerates
its authors, and I am more
than willing to pay what was
due from every subscriber
to the Monograph if he
rightly appreciated its value
and the evident labor and
discrimination shown in it.
I therefore enclose the additional
amount. not, I know, as a portion
of a price asked, yet as some
thing that is justly due from
me, after looking it over.

more carefully than before
and writing as I do
with Mr. Robinson as to
its truth.

I have not been as fortunate
as I had hoped about finding
the rarer Littoraria about here,
but this I have described a
considerable number of rare
things in other directions.

P. matricariae folium ab. is the
only one & ~~of the two~~, ^{of} the
ones that I have described.
I believe I have a right to treat
B. lanceolatum as simple & yet
B. Sunaria like. I have
not worked assiduously enough
in June & early part of July
my work in collecting during
the past summer, is all
done ~~before~~ after July 15, & it was
very painful a task.

In some directions I have
been successful in making most of the
descriptions up with specimens being on
hand. In a few others I have
had to do work &
then I have often had the species & genera
that I can name the best now - and the
spine so continually for these unknowns that I
have left them, & including in some
material ~~for~~ in a separate book - "misplaced".
Now but I see the material is not at hand.

Yours truly

Alpheus Knobell

117 West 43rd Street
New York 7th April 1883

Mr Geo. E. Davenport
Medford, Mass.

Dear Sir

I have your S. O. Card of
— April, and I only regret it would
not be in my way to use more
than a single copy of your Supple-
ment to your Catalogue of North
American Firs. (if published.)
The "Check List" I would not want
with good wishes, however in
connection with the publication.—

I am Yours truly
Robt Devine deliv

Maths. al.

Dec 9th 1880

Mr. J. E. Gray, A.S.C.

Dear Sir,

Your kind letter
is received & I hope you will receive this in
this month.

And as I will be soon down
the Phila. way I hasten to answer
to show my appreciation of your kindness
& friendliness.

I am sending you by mail
two specimens of *Cotyledon cordata*,
Balanites obliqua (Muell.)

" " *termitaria*?

Adiantum capillus-veneris L.

Otus securitata, L.f. Suppl. 475, 1781. (C.M.B.)

The second one is a form of *Balanites* of
which I have not entirely satisfied, but I
put it *form termitaria*, as coming nearest to

what I find in it, and giving you text
book in which it is described.

In Chas. Moris's "Plant Life of the Ad.
Pr. & H. Sonore" It says S. E. 118 do not
give any description which I can make
fit but in ^{Illustration} Vol. XI. No. 27, there is a
form *Oreocidium* mentioned which may cover
this form but unfortunately I have no
work containing a char. var. etc.

Some time last Fall I sent specimens
to Mr. Blake and asked his opinion of
it, and he wrote me that it deserved
to answer *Broc. lindernii* heteromorph., &
at the time I thought so too, but sub-
sequently I have changed my opinion
as I have seen heteromorph. forms & t
are convinced that it is an entirely
different plant, & clearly entitled to
specific rank.

As if you will notice the specimen I
send is of same form as the normal
oblongum & is petioled in a similar
manner, was found growing under

similar conditions, in similar locations & fruiting at same time while the hibernatum is a smaller plant and those I found were much smaller only about 3 to 4 in long. (the sterile found and in fact some were just passing through last week in Nov, in fact there's growing day; and the finds were said to nearly 20, and were a mere number so low to the ground to be in any great danger to be browsed by cattle, unless it was by sheep. while the obliquum & the obliquum ter naturam (I call them) were green until cold weather when they have assumed a bronzed appearance & are entirely no. Culmback, & also were any way from 3 or 4 to 10 or 12 ins (the sterile found) & the fruiting one several ins big for I have Beside the hibernatum will not be in fruit for at least a month or two yet which agrees with Dr Miers time for fruiting Feb to Apr.

I did not take any plants of the *bitternose*, except one or two as I did not want to collect them until in fruit.

I have several sterile fronds more of the *Phlegmum ternatum* (as I call it) and should you wish and want of them let me know, and sorry I have not another fertile specimen.

I also have some duplicates of the *Phlegmum* much larger than those at St. L., and should you want ~~any~~ more of them let me know.

I would like to know your opinion of the *Bethelia* after examination, as I have not labeled any herbarium specimens yet, waiting till I was sure what its correct name may be.

I have been fond of Botany all of my life, but my time being limited for the study of it, I am only able to go into the woods, occasionally

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but try and make the most of what opportunities I get.

I have only been working on the ferns for 18 months or years and do not feel as if I know very much about them.

My herbarium is not large and any additions to it will be very gratefully received.

I will add a list of what I have not got, not expecting to receive all I mention, but only to show what I have not, which is a much larger list than what I have.

Aspidium novelboracense

" *fragrans*

" *marginalle*

" *filix-mas*

Asplenium pinnatifidum

Bolbitis (only three as I have so far)

Cheilanthes (none)

Filix (none)

Scolopendrium (none)

obtusilobatus Greville.

Any of the above will be thankfully
acc'd., especially the Botrychia.

We can send specimens now of
Botrychia, larger than those sent today,
Woodwardia areolata

Gymapheris palau (Sw.) Kuntze. Bot. Ind. 1839

{ *Aspidium* " (Sw.) G. L. Leach see 1613, 1717

{ *Nephrodium* " Gmelin. Pl. 1814. Pl. 37105

Polyodium incanum?

Our send another season, any of following
which may be of interest from the locality
from which they come, i.e. so far South.

Osmunda cinnamomea

" *rogalis*

Woodwardia virginica

" *areolata*

Athyrium filix-femina

Asplenium ebenus

" *f. mucronatum* (Richard)

Poly podium m. acuminatum

Pteris serrulata - adnervia)

Adiantum Cap' ven'

Pteris aquilina, pseudocaudata.

Aspidium thelypteris

" *halans*

& perhaps one or two others which are said to be here, but which I have not found as yet.

I am in correspondence with our State Geologist (& no mean botanist) Prof E.A. Smith, with the view of getting some plants of the asp. ebenaedes from the station at Itavanna ala, don't know how I will come out but hope for some success, if I do will let you know in case you have not that rarity.

I am also trying to get some specimens of Irish Pterisii from N ala but that is quite uncertain yet of that it is still more.

Now my dear Sir; I hope you
 will not deem this to long & tene-
 done, but will bear with a strug-
 gling amateur, in hopes that I
 may enlist your sympathy and
 assistance & that I may be of
 some use to you, for you know
 we sometimes stumble on what we
 most want by mere accident.

Hoping to have the pleasure of a
 reply at your convenience

I remain

Yours very truly

W C. Dukes

259. N. Jackson St

Madison

Wis.

Wm. C. Alcock

Franklin, 1902

Mr. E. S. W. post.

Dear Sir;

Aug. 20.

Enclosed today's mail a few other
specimens, which were just available
to send with first lot, and hope
they may reach you safely and in
good condition.

I will try and send
shortly a small, young, sterile form
of the *B. heteromorphus*, soon for you
to see what it looks like, shown to be
very rare as a specimen.

I will put your name on my
"names book" and when I can send
a good fruiting plant will send you
some of them.

Please kindly give

till the man who added us of course
permitted us to take from whom
else get the exchange sum of
the audience number, or hours?

Having the pecuniary that I have
been may be of use to you and
that I may be able to send you
further information.

Yours truly,

J. W. E. Stevens,

Mobile ala
Dec 31/04

Mr George E. Newcomb

Dear Sir:

Your favor of
27th inst came duly to hand.

But so far the specimens of which you spoke have not been rec'd - I suppose perhaps for some reason you were unable to find them where you intended, or perhaps they may have come astray, however I shall hope to receive them in a day or two.

I am sending you another batch of Batrachia, nothing new, but I thought perhaps they might show some progression or retrogression in one species or the other. The heterodontium? will show or ought to show some advancement and in one specimen a lateral branch shows the nervation very plainly, and

another one shows the point where
the little food makes off.

I shall endeavor to send you spec-
imens of this variety at stated periods
so that you can traces its advance-
ment.

I have transplanted these plants into pots
and seem to study it oftentimes, (my
only time for study) and will then make
notes as I study and embody my ob-
servations in a short treatise, for your
perusal or for the benefit of the mem-
bers of the "Farm Bulletin", the only thing
which would deter me from the latter
would be that anything which I wrote
would smack so much of the amateur
that some of my kind(?) fellow-members
would (in parlance of the day) "jump on
me with both feet."

I will also send several specimens which
I take to be young plants, and all found
of this size & in this peculiar location,
(at the head of a branch, & quite dwarfed with

the overhead foliage much denser than in situations where the plants of the normal form are found) seem to be more incised than those growing in more exposed situations.

I also noticed that all the plants of the *B. obliquum* & of the *B' obliquum* (with ^{and also the unbarbed} lunate segments) which had fruited, the sterile frond was lying down flat in a ~~long~~^{long} ~~soft~~^{soft} condition, while the ~~same~~^{in the same locations} plants of the same varieties, which had not fruited at all this season, were erect & had a fresh, crisp, & green look, - and if it was not for this fact I would be more satisfied to consider the biteminate a form somewhat further removed from the typical *obliquum*, than a separate variety, but when its time of coming up is considered, its peculiar yellow cast, & the shape of its ^{sterile} frond, its semi-recumbent sterile frond, showing even at this date (Dec 26th) lateral, undeveloped, sterile fronds, & the embryo-state of the fertile frond, I am

loathe to set my opinion up for its being anything but a separate species.

I also noticed that I found it only in old abandoned fields, which were under fence, and at the edges of clumps of Cedars & Yewpon hedges, sometimes under the overhanging boughs, but have not found it so far, in open woods where some of the best specimens of the other two of Bobley & Bertram were found.

I think I have enough located to supply our wants, with plants at different stages until I gather the mature plant.

I have two friends here in Mobile Messrs McNeil, (Parker & ~~filius~~) who are ardent admirers of Prof Maderwood and they too are after the same plant for him and I am afraid that they have located my colony (it contains 100 or more in the space of about 2 acres) if so I will have to be "up and doing" to try and not be outdone. They are nice

men ^{often} but we don't go out together much, because they seem to resent the fact that I am willing to gather information & help from other sources,

I am after taking what looks like "Truth" from whatever source I find it

I have as best books, Dr Mohr's "Plant life of Ala.", Dr Smalls "Flora S. E. U.S." Gray's "Lessons in Botany" 1871, Clites, our ferns in their haunts" Hudwood's "Our Native Ferns" & Smith's "Historia Filicium" so I lack my faith implicitly to none, but consult all, & glean here a little & there a little. I am fixing to my next season for my own satisfaction to try & raise an *Asplenium ebenoides*, artificially, on similar lines to what is given in Dr Number F.B. by "your humble servant" I mean to try the *Camptosorus* ^(the incisa form) *rhizophyllus* spores with both *Asplenium* & *A. parvulum* & perhaps with *Athyrium filix-formis*

Mr Clite intimates in his work that perhaps

this cannot be done, except by sectioning, but if a chenopodiis is an hybrid it occurs without such means, as Nature surely does not employ any other means, but imposition or *factio-position* & it is on that line I shall work. - but I should not bore you with this line of speculation.

I have bilateralism before I had the pleasure of serving you, to get specimens of what *Ophioglossi* I could, although Mohr in his P.L. of Alz, only gives two varieties *O. Crotalophoroides* and *O. pusillum*, the latter he says "very scarce" while Dr. Snell gives another, *O. vulgata* to Fla & I think possibly it may be with us also, as both Fla & Alz. are I think included in the "Louisianian area" - of Botrichia, Mohr only gives three viz *obliqua*, *baternatum* & *Mobile* & a reduced form of *B. virginianum* - viz *B. gracile*, the latter I have not found yet but hope for better luck another season. There is in the lower part of an

adjoining Co. (Baldwin Co) or section
lying opposite mud flower Fls, where
there is said to be several forms
of ferns belonging to the trunks,
I am planning to take a trip
there next Spring if I do and should
happen on any "finds" will let you
hear from me.

Now my dear Sir, I did not intend
to inflict such an offering upon
your good nature when I began
but would beg you to excuse me
this time & promise not to do so again
but the study of Botany is to me the
recreation to a man closely confined
all day, whose means, unfortunately
are not commensurate with his love
of Nature.

Hoping that you will bear with a strong
but amateur & extend occasionally a
helping hand, I am

Very truly Yours
W. C. Dukes.

P.S. The thought occurred to me to send
you the references given in Mohr's P.L. of Ala.,
for while you may be familiar with all of them
there may be one which would be of use to you.
"Botrichium hibernatum. (Lam) Nutt. Bot Gaz 22: 407, pl 21. 1876
Osmunda hibernata. Lam. Encycl 4; 650. 1797
Bulbiferus lunariae Michx. Fl. Bor. Am. 2: 274. 1803.
Botrichium lunariae. Sw. Syst. Fil. 172, 1806.
B. ternatum var lunariae D.C. Eaton Jns. N.A. 1: 148, t. 20, f3. 1877

Eaton, Ferns N.A. I. c.

Herb. Geogb Surv Ala - Herb Mohr -

Type locality -

"M. Michaux a découvert cette espèce dans la Caroline-
méridionale"

The above is not intended in any way to instruct
or enlighten you, but merely given in case
they ~~may~~ throw more light upon the subject

Yours &c

W. C. L.

Feb. 1.

Friday Feb^r 25

At the risk of being considered tedious I
will add a few more lines.

This evening I took a short trip in the woods
to procure a few plants of *Polypteron*, which
I send to a herbarium in Ohio. I came
across one or two plants of *Batatasia*, which
I dug up and send with the others to you.

The only reason that I thought them of
sufficient interest to send was, because they
show a peculiar form, and one which I have
not heretofore observed.

You will notice that they have sprouted, as
it were, a secondary sterile leaf, the old
original sterile leaf has evidently been
cattle-browsed, and I should judge from
the small part of the leaf surface left
that the plant was originally of the typ-
ical obliquum form, as were all the other
specimens immediately about them, which
were more protected than these injured

ones, but you will notice that in form
and size the secondary sterile leaf
is very similar to the small specimens
of heterophyllum I send.

I am familiar with the fact that many
plants try to extreme the injury done them
in their early stages of growth, giving
rise to the form *obtusalata* or *Ovulea*
& perhaps in Woodwardia, but this is the
first instance I have noticed any such
occurrence in the Botrychis.

Hoping that this will afford sufficient
warrant for a second post-script to a
too long letter under ordinary circumstances.

Yours &c &c.

Yours very truly
W. C. Darke.

Mobile ala Jan 5th 1905

Mr Geo E. Lawrence;

Dear Sir:

I am very glad to report that the pkgs of specimens have come to hand safely, and I am delighted with them, and want to express my thanks for them, and the generous number that you sent.

I shall certainly experience much pleasure in studying them, especially the *Tolmatochia*.

The notes accompanying the packages have been carefully read, and much enjoyed, but have made me realize that I am indeed a novice, nevertheless it gives me food for thought, and also opens up new lines of study to me.

The only phase which I can see that you have not thoroughly investigated is the chalcedony phase, but even that I am by no

certain ~~that~~ we have not fully investigated.

The specimens from the West & Alaska were all seen to me and should have received careful attention.

Your treatment of the *Babcockia*, in connection with the two specimens last sent you have shaken my faith in *B. heterophyllum* as a separate species, but I shall give it closer attention from now on, both in the field & those I have growing in pots at home, so that if there should develop any thing abnormal I may catch it,

One pot I have decided to stimulate with straw manures, bone-dust, ^{reg humus} slacked-lime &c to see if I can hasten the time of fruiting and also increase the size of the sterile leaves, which at I do well I think make it very similar

to those I have seen you will consider
you may well be interested in a few
of my favorite forms.

One of the plants in the pot would be
has already outgrown the others & is losing
its terminal foot & the strict head is
becoming more triangular in shape &
the segments look to me as if they are
becoming larger pointed, which it will
well bring it much nearer in form
to the terminal form above referred
to. & is also losing its peculiar sessile
or semi-sessile character it first had
when transplanted.

I have sent a lot of spores gathered from
a colony in which green back forms
the normal sphenium & the terminal
side by side, to a friend of mine
near Phila. who is so situated as to
be able to grow them under favor

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able circumstances and I will ask
him to make up both forms and
produce from these & some, for if
so that will be additional evidence
that they are such different forms
of the same species.

I shall also try myself on the Scab-
lins, taking up Mrs. Miller's very
question at J. B. Vol XH, No 3, p. 322 i.e.
that they & the *Succotashins* are de-
pendent upon a fungus being pres-
ent for their perfections.

There are one or two questions I like
to ask, which I hope you will be
kind enough to answer for me at your convenience.
One is how long-lived are spores gen-
erally? Will they keep ^{one} from one sea-
son to the next?

Another is if you know who has
Synopsis Filicium for sale? I have

written several parties, but so far
have not been able to locate the
publisher.

Holding myself in readiness to
serve you in any way I can
Yours sincerely

Very truly yours
J. C. Scott

Mr. A. E. Garver, Jr.

Dear Mr. Garver,

Dear Sir,

Enclosed you will find a specimen of *Agave* -
the name I have given it, I will call it
our State Botanist, said no name
had been assigned to it, I am sending him a
specimen to tie it up with as
soon as possible.

I am sorry I could not send
you, but at only got a few, but
hope this one will be of service to
you.

Prof. D. writes me that the
coring of this tree at Havana also
is not near so large as it once
was, and has been drawn upon so
freely that it will perhaps become
exhausted.

He also writes me that "the slaves should be well poisoned by brushing them over with a solution of carboline such kind as in alcohol, to preserve them from insects." The above may be entirely familiar to you, but at nearly midday it is "done" & is not.

I am trying some time to try to settle the difference between some specimens sent me from M.H. & from You, one is labeled *A. cristatum*, another *A. Baallii*, another *A. spinulosum nitens*, & *A. spinulosum dilatatum*. It certainly makes me muddled.

The *A. hibernatum* show no signs of a fruit spike yet, but I have my eye on them, and the fellow who "gets there" before I do has got to "be up and doing".

I have found another small colony

leaves writing on bushes, but they do not seem to be plentiful around Mobile, at any rate I have not come across many localities.

My plants in pots at home are growing further apart, or so it seems to me one is decidedly isolated as I write you & looks more like the tree's I sent you in the Fall, & if it was more stocky it would resemble more a spec I have (from Mr. C. Buchholz, Griffins corner Md.) labeled ^{catapil. fruits. n.s.} of Habenaria, & I think col ~~the~~^{catapil. fruits. n.s.} I have no text book giving that var so do not know much of its history & can only compare my growing plants with my herb species.

I shall make another trip out in the woods soon and if I see any change worthy of note will send you a

about or so if you will merely make notes & write you, leaving the plants until the fruit develops.

Our next field suggestion I can only be Mr. Gentry, Sacramo Wash, in hopes to be able to obtain from him *B. occidentale* & *selinifolium* along with others & *B. rig. var. gracile* (which as far as goes in all probability) I will have about one third known of, in my herbarium.

I am in correspondence with two parties in N. Cal with the view of trying to get at *Petrosia* & *Alabamensis* *A. puluatipedatum* & other rare ferns from that section, should there be any among them (if I am fortunate in getting them) that would be of service to you let me know and I will dot it down in the memo-book I keep for that purpose.

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I have also written to a young friend of mine who is in Panama, as Deputy to our Consul there, and I am in hopes of getting something interesting from him. Named plants from that is often interest you?

I am also trying to get some of the S'la forms, especially *Adiantum tenerum*. Do you know any collectors in Fla other than Mr. S. Rapp of your bird? Scarcie & have consumed too much of your time I will close.

Hoping to have the pleasure of hearing from you again some time
at your convenience. I remain

Very truly Yrs

W.C. Dickes

Mobile Ala. Mar 1st 05

Mr. Geo. E. Davenport:

Dear Sir:

I take the liberty of sending you some photographs, which I would be glad to have you look at with your eyes.

They are three pairs of my specimens & may help to me somewhat, as the identity of one of the forms was quite uncertain. I have never known them to be like #3 I am sure is *Camptosoma*, and #2, no. #1 of course is certain of, & think it is *Aspidium* like *notatum* from the distribution of the ova, but the winging is so poor which puzzles me, as far as I can make out they don't have articulated wings, while the aspidiums I believe are free-veined, then again they both have the little discs on the

20

and so I have, as you will see,
written to you again.

I have a friend off to New Zealand
in February, and I am sending him
one of your old specimens, and I
will add to it a new one.
This will be the last specimen
you can expect as the weather becomes
If it is not too much trouble could
you please to have your specimen.

Many a good time will be had
on the celebrated coast of New Zealand.
I would however in the month of March have
the pleasure of visiting one or two
new colonies of *B. bituberculata* &
I think I will be able to secure
the specimens I want.
I found them this time entirely in
the open, in old abandoned fields
without the protection of trees, bush
& brush-heap as is customary with

the afternoon, after dinner went into
the field, the weather being overcast,
but it was a bright green, showing
signs of the rain, there was no fish
seen in the watered section.

There is also a small lake about
the same in extent to the larger
from which I have taken a lot of
B. tenuis found many miles & wrote
you that they did not grow as much
of the same species as the others
did. but in my last trip, since
our last search at Laramie several
which were lying flat on the ground
and looked like smooth bronze, much
as the others do, but found some
with fruiting spike, which I dug up
several of them for the specific pur-
pose of looking for a fertile spike
but found two specimens with the

all of them, yellow & decidedly on
the wane, but with two small new
sterile heads just above the ground
in the same niches, below the old
heads, the certainly must be a
strong effort, between them and the
intermission.

I also located some 25 or 30 plants
of *O. bulbosum* (Nutt.), found them scattered
here in the open forest under Sassafras,
the leaves just above ground (Mar 22)
with the first signs evinced by
the spadix of the sterile head, just
waiting for the soft Sassafras canopy
to cover them & make them raise
their heads to greet their neighbors
for the season of 1905.

I think if no more cold comes
to us, that is about two or three
weeks I may gather some good

Specimens.

I am studying the drift over the
limestone section, but am afraid
I will not be able to locate the
lenses, unless he does accordingly. Still
I mean to keep my "eyes open" for
you and take hold of as the ex-
plorations would otherwise be suspended.
Hoping you will pardon me
troubling you so often & that
you will not think me troubling
the photos "too many"
and unkind.

Yours very truly,
W.C. Gukes

Mobility Ala.

March 13th 1905

Mr Geo E. Pausenbier
Dear Sir,

I am sending you
to day by mail a few more specimens.
The *Batrachia heteromallum*? are just coming
into fruit March 12th on and as you see they
are of an entirely different type of fruit-
ing and as far as I can judge are
a different plant from the *B. obliquum* and
also from *Speciosum* I have labeled in peo-
cil. *B. le.* this major until I can get its
true pedigree.

I also send a few *Ophioglossi*, for as thi'
you do not mention them I suppose
as they are of the "same breed of pups"
you might like to take a look at
them. I think that they are rather
undersized, which may be occasion

by the cold weather, it having been
quite severe weather for us down
Yan & Joh.

I shall be in the country, and if I
find any unusually good specimens
of either Batrachis or C. philadelphica will
send you a few more.

I think I have sent all varieties
which are found near us, with the
exception of C. susillum and I am
afraid I am destined to be disap-
pointed in finding that one, but
will try every chance I get to dis-
cover it, but as the season over there
with us is considerably short, I am
afraid my chances are small.

If I had been able to have as-
sisted you in any way I am
glad, as it will make me feel
that perhaps I have been able to

rebag you for your generously extended time & trouble.

As I am writing on my way home now, I will tell you much or few questions.

My dear Sir, in your account of Dr. G. A. Plummer's & Dr. May's publications on the mittalites, as containing the authorship of another, the archaeologist - How was it told "father from which"? Does it follow any set plan or is it only revealed by the year?

Among the pieces you sent to me was a crested Beckonia, from Bear Creek, Ga., if I remember correctly.

Can you give me the address of my Party? There abouts from whom I could procure roots? I think it is a particularly handsome fern.

H

Finally I will say that it I can be
of any use to you in getting away
about or in any other way serve
you it shall be glad to have
your command me.

Thanking you for all your kind-
ness and noticing I may sent
you "out of touch" of your per-
sonal good graces. I remain

Very truly yours

W. E. Gookin

Mr. Geo. E. Davenport

Mobile Alabama

Dear Sir:

Your favor of recent date, containing the blue prints of *P. serrulata* & *P. cretacea*, so kind
Please accept my thanks for same.

The reason why I wanted a specimen of the latter was because I had a specimen from Mr. H. A. Green of Troy, N. C., labelled *P. cretacea* which was identical with the *Pteris* which is plentiful on the brick walls of our cotton warehouses, and I was anxious to get a genuine spec' to see if I had been correct in labeling my specimen.

The prints will answer my purpose as they give the difference very clearly, and one would have no excuse for mis-naming after seeing them.

D

I send as many spores of the B. you want as I could get, when I went out to get them I found that nearly all of the plants had shed their spores and the stalk of the fertile frond had turned a whitish-yellow and were all laying down, and the sterile blade had also taken on a yellowish look showing that they were about through with business for season of 1904-5.

That is those plants which had sported a seed stalk were as above described, but those I found in sheltered or semi-sheltered situations and a few in exposed positions were still fresh and green, but not a single of the fresh looking ones had thrown up a fertile frond

I had gathered some for my own use, and a few for exchange and have selected a few of them which are as fully developed as

any I have seen, but while they are a fairly good average, I must confess that I have saved the best looking specimen of the lot for my own collection, and I don't think you will blame me for that.

I also send a lot of spores gathered back face from the typical *B. obliquum* which I thought you might want for comparison with those from other sections.

If had you intimated that you ^{wish} the spores, I would have secured you a lot from all the different forms, including my famed (?) "B. lunarioides major", which I think the most graceful of the lot, and also from *C. Crotalophoroides*, but I did the best for you I could and am sorry if I "left undone any thing I should have done" &c.

I am a little loathe to ask you if you ever rec'd two small photos some

time since, one a walking fern
and the other one I think the
pinnatifid spleenwort, but I expect
that they were so small that you
over looked them, so it don't matter,
as the only reason I was anxious
to settle the question was because
I have some of the spores of the
last mentioned one which I have
seen with the ebony spleenwort and
am anxiously awaiting results, for
after a careful reading of the
pamphlet by Miss Sloane, which
you sent me, I am inclined to
believe (from her description & the
pictures of her hybrids) that the
plant found at Havana Ala is
an hybrid of *A. chenense* & a
^{back kept pinnatifide} *pinnatifidum*, & not of a *chenense*
& *Comptosorus rhizophyllus* as all
the specimens from that station I
have are much more deeply pinnat-
ed than were those she raised.

I will be pleased to have any root which you can send me which will not cause inconvenience to get, nor too much expense for sending.

I have a bed in which I have nearly, if not quite all of our local ferns, and am enabled by having it, to study the different varieties, when I have not the time or opportunity to go into the woods. Should you want any more of the *P. serrulata*, either pressed or the roots I can easily send you some they are plentiful with us, and should there be any other plant you would like from our section, any of the allies, *Azallatck* or *Sagittaria Mohrii* *Epidendrum conopseum*, &c &c I will be glad to do what I can to supply them.

Hoping that this will not close our correspondence which

6

I assure ^{you} has been both instructive
and interesting to me, and as-
suring you of my willingness
to serve you in any way within
my power I remain
Yours very truly

W.C. Lukes

P.S.

The plants selected for you I failed to
bring down town with me this morning, but
they will follow in a day or so

Yrs truly

W.C. Lukes

Mobile Ala

August 11th '55

Mr. & Mrs. Chamberlain.

Dear Sirs:

I have made a trip
out west and am at present
on my way up the coast. The
weather has been very bad, but
I have had the last week or ten
days, and still am dry, and the
days becoming lighter and cooler
the last few days. I also had
a chance to go ashore. There
will be no more to be had for
this season, if what I have sent
you above may be less for
what you want it can, another
chance will not be had, unless
you, asking for you all you
want, and can pay, I did not
have time to search a good
many for you at this time
I have taken the liberty of send-

you be made a few visits up
the other streams which I have
been successful in finding in
our section, and no one can
tired in trying to make some
from the edges of them to his
home this night save you. It
would be better in a way in
comparing them with those many
will see, which might differ
very much owing to different
climate & conditions, but should
you not care to go on them or
it seems to me more difficult
to do so, why, just pass them
over.

Should you conclude to stay here,
I would suggest that you
give them a rest, letting them &
giving them enough water from
time to time to keep them alive
and bringing them out later, in
a similar manner to that taken

is supposed to prevail with
them to whom a passage of
the following kind will be
of value, or to others who may
own it to the favor of our having
settled down in our new
home. It is the only one of the
many which I have seen
written in German, and very short.
I hope it will be of service
to you. The pleasure about a week
ago now of sending the following
photographs, that especially may be
of interest in the medical
field, and I expect that this
is about its Southern limit
that they yet has been also find
by a friend of mine, that also
was being written by Dr. Neher.
Hoping that these presents may

be of use to you, and holding
myself in readiness to receive
you in any case I can -

Yours

Very truly yours

H. L. Parker

Mobile Ala:

Abt 21/105

Mr Geo E. Rammelkamp
Dear Sir:

In looking over my letter's recently I came across this and from a gentleman living near Phila. and as it contains a reference to the prothallus of Botrychium as I thought perhaps it might be of use you could use, if so I think should be my fault, it is so until I shall have caused verify the statement.
Please return as I like to keep for references.

I showed the specimen of Botrychium sent you some time ago by Miss Laura A. Finlay of Maternal City Cal
prose. to be anything new let me know as I want to keep posted.

and the way her letter reads it
leads one to think that perhaps
it may be a new sp^{ce}

With Kind regards

Yours sincerely

W. H. C. M.

Mobile Ala

Sept 1st 1881

The plant was now
fully developed.

I have a small
piece of the old wood which I
was unable to reach, and if you
can get it, I would be glad to
have you tell me what it is, as even
a portion of old wood is much the best
specimen size.

The plant is about 4 or 5 in. high, of
a fascicular growth, and the young
fronds have a reddish or brownish
cast when first unrolling, similar to
the young fronds of *Ulmaria pedatum*
and the fully developed fronds have
a stiff, brittle feeling.

I have been ^{un}able to find what it is
and would be obliged to you if you

b.

With kind regards to the names

of all the men, women and children
in Mexico & Central America who have
had to leave their homes because of
the flood and drought.

With kind regards to the names

of all the men, women and children

of Central America

Mobile Ala
May 25/05

Mr. Geo E. Cawnpore

Dear Sir:

I hope that
this may find you keeping
youself again.

Will you kindly send me
the address of A. H. Curtis,
if you know it?

He delineated the Florida
pears in T. 13 for April 1905

Also do you know address
of C. F. Baker he is mentioned
in connection with Cal pears
in T. 13.

I am still trying to make my
collection more complete & I am
after some of the So. Fla va-
rieties. Yours truly

J.

Geo E. Cawnpore

Yale Univ., Aug-05
Mr. W. C. Brewster,
Dear Sir,

I wish you would give me some
details concerning the "Bullock's" and
what will be exigency your accustomed
handwriting.

I am still harrying away about
my hobby as I have opportunity to
do so, and have had the pleasure
of one or two letters from Prof. Eaton
of N East. Mass.

I had the temerity to write to him
"off hand", much the same as I
did to you, in hopes I would re-
ceive as kind treatment from him
as I did from you, and in that I
was not disappointed, for he like
all true men of science, are char-

stable and considerate of those who are buying in their humble way to gain an insight into the doings of Nature's agents.

I also find that he is not entirely in accord with Prof. Under, especially on the "Botrichium" question, and says that in the Botrichium, as in other livers we are "over species."

I was prompted writing him by finding out inadvertently that he had spent some time in Florida in recent years, and I was anxious to add some of the Floridian forms to my collection of ferns.

He has promised to send me some spec's and no doubt in due time they will be received.

Being out on a tramp the other day I was reminded of your big

going to be found a foot or some
heights up which I have found
early last Spring at the time I
was collecting "Heterodon".

I found one or two plants of what
I have called in writing your P.
"Lunaria" which I have seen very
thin stems like a fine set "Cone-leaf-
sage", which the stems & brittle bands
of bark face out like mulch and
fall to the ground, but which
had a network like fronds, very
much the size and cutting of
the "Heterodon" springing up right
where the old, withered stems had
entered the ground, but if it
sprung from the root or from the
old stem I did not examine, be-
cause I wanted to watch it and
see if it carried through the Sum-

now, and if a female spire would want its action and behavior at the same time the dragonfly or similar form would spring into life.

It interested me, for in one of the books I have read on the subject said that the finds entirely "disappeared by the beginning of the century". However, I believe my account following fully on this.

There are but few plants and they are a few the yrs. ago back and on the edge of the swamp under the shade & protection by Yuccas and other shrubs.

I am on the "look out" to see if I find any other similar plants, to find out if this is merely an accident or a design where the

in our collection were present.
I have to say at once of what I find
anything I think would be useful to
you. I have taken one or two photographs
of the plant & its seedling, the
seeds themselves have been so numerous
for a while now, scattered about in
my fern house, to see if they were
not some form induced by
their environment. Some growing
there plenty of moisture and op-
plications of lime must be found and
I think from the new found be-
ginning to show that they will
bear well the regular mountain types.
When you're ready send me what I find;
I have also a Wardian case in
which I am trying to raise some
"sporangia," I have the case covered.

with a dark rock, in the bottom
I have a marl, which I suppose
water, in which I have two beds
which are made from lime and
sand, known here as "lime stone"
water, where it have broken out &
been much broken sifted over so it
can't be divided into two compo-
nents says a small quantity, in
the middle enough I have a bed of
A chonetes, or, serpulites, a few *Orthis*,
A. angustifrons, *Ostryum*, *filix form.*,
& *Camptosoma*, *strophobolites*, and may
plain as he said if the later will
surf across with others as well as
with the A chonetes, but so far I can
get no *Prochallium* to develop, there
are plenty of little round green globes
but that is all, the spaces covered
planted the first part of April

and I thought that to this
time I would have learnt
of material to write on, but
none so far.

What do you suppose is
the trouble?

Well I expect you will
wish I had stopped long
before this, so will bring
this no more effusively to
a close,

Hoping I have not wear-
ried or bored you!

I remain etc

Very truly,

P. H. G. Lukes

Mobile, Ala.

March 31st '06

Mr. Geo. E. Davenport,

Dear Sir:

It has
been many months since
I have heard anything from ^{you},
and I have often thought
of how you are getting along
and if you were able to
take up systematic work
again.

I have been unable to
do much myself, owing
to sickness in my fam-
ily, all last Fall & this
Winter, but have suc-

2

ceeded in adding quite a number of new species of ferns to my collection.

I am inclosing in this a pamphlet written by Mr Maxon, and published this Spring from Washington.

I know that you are not in accord with this line of procedure, but thought if you did not have it, you might like to keep up with what was going on."

You once spoke of having growing in your yard a Crested Dicksonia, procured

3

somewhere in Mass., "Blue
Flax" I think it was.
Should you be able to
locate it at this time
of the year I would be
very glad to have you
send me a root or so of
it, but if it is not
convenient to do so, do not
let it worry you for I
should not like to give
you any trouble in that
way.

I thought I'd like to try it
as a specimen plant,
because it would be out
of the ordinary, everything

1
+

here is either the common Boston fern, or Pieroni's fern.

Now my dear Sir!
Dont let this trouble you
and if not convenient dont
bother to answer this, for
I shall know if I don't
get any answer that
you are not able to
respond to my request.
Hoping that your health
has improved since I
last heard from you
and assuring you of my
sincere wishes for the
entire recovery of your

5

Sight, and holding my-
self ready to serve you
in any way I can

I remain

Yours sincerely
Wm C. Dukes

X

Mobile Ala

May 19th 06

Mr Ted E. Davenport,
Medford Mass.

Dear Sir:

Package crested *Demissiaratia*
rec'd in good condition, and I am very
much obliged for same.

I am afraid you think I was rather
persistent in the matter, but I thought
the specimen was a pretty one and
I was sure the plant would also
prove attractive in the growing state.
I packed it promptly, and hope to
secure an attractive plant.

I hope you have fully recovered
your health, and also that your
eyesight has improved for I should
hate to think of your being denied
the pleasure of botanical research,
as well as the public losing the
benefit of your work.
I have been of necessity obliged

to do less collecting, and am so placed now that I do not get into the woods as often as I used, or as frequently as I should like.

I was in hopes of meeting Mr Clute last winter when he was South attending the meeting at New Orleans, but the trains were so far off schedule time that he passed Mobile in the night time and consequently I missed him. Since writing you last I have made some very pleasant conquests among the number Mrs Taylor of Thomasville Ga, and Dr R. J. Smith of Milpitas Cal, both of whom you doubtless know.

I find those who are fond of Nature-study, are always of a pleasant disposition and ready at all times to extend the

helping hand to struggling amateurs like myself.

During last winter I received from a correspondent specimens from France, England &c, and I have taken spores from many of the species and sown them in suitable places in the neighborhood of the City in hopes that some of them would become established and add to our flora. I have also, lately set out several plants of both *Nephrolepis* and *Lya japonicum* from a station near the city which is being opened up for settlement, and beds fair to destroy the station entirely.

This is the only place I know of either species being found about here, and is the one in which Mr McNeill is mentioned of having found them in a late pamphlet.

by Prof Underwood on new ferns
in U.S., which publication you
have no doubt seen.

I am still "pegging" away on my
endeavor to raise a hybrid from
Aspl. parvulum & a *pennatifidum* in
a similar manner in which Mrs.
J. raised hers from a *ebeneum* &
C. rhizophylloides, don't know if I ever
will succeed, as I find much dif-
ficulty in dividing the prothallium.
Hoping you will let me know
at any time showed I be able
to serve you and wishing for
you a pleasant, profit able and
healthy summer
I remain

Yours very truly
W. C. Dukes

Copy of Letter from Chas. T. Druery F.L.S. to
Maxim, Pres. S. F. Chaplin

"I have read with much interest Mr George E. Davenport's article on "Abnormal Forms and Hybridity in Ferns" and would ask to be permitted to point out that with reference to Mr E. F. Bowe's cross between Aspidium (Lastrea) filix-mas ~~var.~~ palea-ceum, known to fernists here as Lastrea pseudo-
mas and Aspidium abbreviatum known here as Lastrea propinqua, there is absolutely no question of distinct genera, nor any connection between the latter and Cystopteris or Polystichum except in a wide sense. The species Lastrea filix-mas has been subdivided into three — L. filix-mas, L. palea-
mas and L. propinqua by the late Mr G. B. Wollaston, who pointed out sundry differences as regards deciduousness and other minor characters which certainly justify their classification as subspecies but no more. A cross consequently between them is less, not more, striking than one between Polystichum aculeatum and P. angulare; between which the sub-specific difference is more marked. As for Cystopteris or Polystichum, they are both absolutely outside the question. Both forms of Lastrea and Nephrodium are and simple, if we prefer to admit them, synonymous.

To my mind, however, there is very little evidence of a cross having taken place at all. The result of the sowing appears to have been a crossing both kinds; and as both, moreover, are given to vary, and their characters are closely akin, even a plant intermediate between the two might well be a sport per se.

With the Phystieum crosses or hybrid no such doubt exists, as two distinct varieties were taken and the peculiar cruciate characters of one species appeared in resulting plants of the other species, accompanied by a considerable loss of fertility, & few spores germinating.

With regard to Polyodium Schneiderii, considered by Prof. Bower as a good hybrid between P. aureum and P. vulgare var. elegantissimum; There is absolutely no room for doubt as to the alliance. P. aureum is a large growing species with broad pinnate glaucous fronds. P. v. elegantissimum is tripinnately cut into slender segments, but not constantly so, partially reverting here and there to the normal, sometimes entire fronds or only pinnae or parts of pinnae doing so, so that one and the same frond may display the fine cutting, intermediate coarser cutting and quite normal segments.

P. Schneide it is leathery, gigantic, slightly
glaucous P. v. elegantissimum, as large as P. aureum
, with smaller but woolly rhizomes and partial
reversions of precisely the same kind: large sori
are produced freely, but the spores are all
~~abnormal~~ aborted and the fertility barren.

Scolopendrium vulgare × Asplenium heterophyllum
is also a true hybrid beyond doubt. The fronds
in my possession are scaleless heterophyllous fronds,
somewhat confluent at the tips; the fructification
of the upper half is purely asplenioid, in single
lines; in the lower half these lines are in
faced pairs, i.e. scolopendrium beyond any doubt
at all.

The nomenclature of ferns is such a slough of
despond that I hardly dare refer to Mr D. B. Gilbert's
article on "On the Genera of Ferns"; A Study of the
"Aspidaceae" for fear of getting embogged.
I cannot, however, help expressing my agreement
with him as regards Polystichums. To see these
clumped together with such wholly different plants
as Nephrodium and Cystopteris is abhorrent to
every actual grower of ferns, and in this country,
no one, except the terribly conservative systematic

botanists, will call them anything else but
Polystichums

11 Shore Road, Acton, London, W.
February 11-1900

~~11~~